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[Page 11789-11791]  
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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. 2003-NE-55-AD; Amendment 39-13526; AD 2004-05-31]**

**RIN 2120-AA64**

### **Airworthiness Directives; Rolls-Royce plc Trent 700 Series Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for Rolls-Royce plc (RR) Trent 700 series turbofan engines. This AD requires revising the Time Limits Manual for RR RB211 Trent 700 series turbofan engines. These revisions include required enhanced inspection of selected critical life-limited parts at each piece-part exposure. This AD results from the need to require enhanced inspection of selected critical life-limited parts of RR Trent 700 series turbofan engines. We are issuing this AD to prevent failure of critical life-limited rotating engine parts, which could result in an uncontained engine failure and damage to the airplane.

**DATES:** Effective March 29, 2004.

We must receive any comments on this AD by May 11, 2004.

**ADDRESSES:** Use one of the following addresses to submit comments on this AD:

- By mail: The Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2003-NE-55-AD, 12 New England Executive Park, Burlington, MA 01803-5299.

- By fax: (781) 238-7055.

- By e-mail: 9-ane-adcomment@faa.gov

You may examine the AD docket, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

**FOR FURTHER INFORMATION CONTACT:** Christopher Spinney, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7175, fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** A recent FAA study analyzing 15 years of accident data for transport category airplanes identified several root causes for a failure mode that can result in serious safety hazards to transport category airplanes. This study identified uncontained failure of critical life-limited rotating engine parts as the leading engine-related safety hazard to airplanes. Uncontained engine failures have resulted from undetected cracks in rotating parts that started and grew to failure. Cracks can start from causes such as unintended excessive stress from the original design, or they may start from stresses induced from material flaws, handling, or damage from machining operations. The failure of a rotating part can present a significant safety hazard to the airplane by release of high-energy fragments that could injure passengers or crew by penetration of the cabin, damage flight control surfaces, sever flammable fluid lines, or otherwise compromise the airworthiness of the airplane.

Based on these findings, the FAA, with the concurrence of the Civil Aviation Authority (CAA), which is the Airworthiness Authority for the United Kingdom (U.K.), has developed an intervention strategy to significantly reduce uncontained engine failures. This intervention strategy was developed after consultation with industry and will be used as a model for future initiatives. The intervention strategy is to conduct enhanced, nondestructive inspections of rotating parts, which could most likely result in a safety hazard to the airplane in the event of a part fracture. We are considering the need for additional rulemaking. We might issue future ADs to introduce additional intervention strategies to further reduce or eliminate uncontained engine failures.

Properly focused enhanced inspections require identification of the parts whose failure presents the highest safety hazard to the airplane, identifying the most critical features to inspect on these parts, and utilizing inspection procedures and techniques that improve crack detection. The CAA, with close cooperation of RR, has completed a detailed analysis that identifies the most safety significant parts and features, and the most appropriate inspection methods.

Critical life-limited high-energy rotating parts are currently subject to some form of recommended crack inspection when exposed during engine maintenance or disassembly. The inspections currently recommended by the manufacturer will become mandatory for those parts listed in the compliance section as a result of this AD. Furthermore, we intend that additional mandatory enhanced inspections resulting from this AD would serve as an adjunct to the existing inspections. We have determined that the enhanced inspections will significantly improve the probability of crack detection on disassembled parts during maintenance. All mandatory inspections must be conducted in accordance with detailed inspection procedures prescribed in the manufacturer's Engine Manual.

Additionally, this AD:

- Allows air carriers that operate under the provisions of 14 CFR part 121 with an FAA-approved continuous airworthiness maintenance program, and maintenance facilities to verify completion of the enhanced inspections.
- Allows the air carrier or maintenance facility to retain the maintenance records that include the inspections resulting from this AD, if the records include the date and signature of the person who performed the maintenance action.
- Requires retaining the records with the maintenance records of the part, engine module, or engine until the task is repeated.
- Establishes a method of record preservation and retrieval typically used in existing continuous airworthiness maintenance programs.
- Requires adding instructions in an air carrier's maintenance manual on how to implement and integrate this record preservation and retrieval system into the air carrier's record keeping system.

For engines or engine modules that are approved for return to service by an authorized FAA-certificated entity, and that are acquired by an operator after the effective date of the AD, you would not need to perform the mandatory enhanced inspections until the next piece-part opportunity. For example, you would not have to disassemble to piece-part level, an engine or module returned to service by an FAA-certificated facility simply because that engine or module was previously operated

by an entity not required to comply with this AD. Furthermore, we intend that operators perform the enhanced inspections of these parts at the next piece-part opportunity after the initial acquisition, installation, and removal of the part after the effective date of this AD. For piece parts not approved for return to service before the effective date of this AD, the AD requires that you perform the mandatory enhanced inspections before approval of those parts for return to service. The AD allows installation of piece parts approved for return to service before the effective date of this AD. However, the AD requires an enhanced inspection at the next piece-part opportunity.

This AD requires, within the next 40 days after the effective date of this AD, revisions to the Time Limits Manual.

### **FAA's Determination and Requirements of This AD**

Although no airplanes that are registered in the United States use these engines, the possibility exists that the engines could be used on airplanes that are registered in the United States in the future. The unsafe condition described previously is likely to exist or develop on other RR RB211 Trent 700 series turbofan engines of the same type design. We are issuing this AD to prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane.

### **FAA's Determination of the Effective Date**

Since there are currently no domestic operators of this engine model, notice and opportunity for public comment before issuing this AD are unnecessary. Therefore, a situation exists that allows the immediate adoption of this regulation.

### **Changes to 14 CFR Part 39—Effect on the AD**

On July 10, 2002, we issued a new version of 14 CFR part 39 (67 FR 47998, July 22, 2002), which governs our AD system. This regulation now includes material that relates to special flight permits, alternative methods of compliance, and altered products. This material previously was included in each individual AD. Since this material is included in 14 CFR part 39, we will not include it in future AD actions.

### **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment; however, we invite you to submit any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under ADDRESSES. Include "AD Docket No. 2003-NE-55-AD" in the subject line of your comments. If you want us to acknowledge receipt of your mailed comments, send us a self-addressed, stamped postcard with the docket number written on it; we will date-stamp your postcard and mail it back to you. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify it. If a person contacts us through a verbal communication, and that contact relates to a substantive part of this AD, we will summarize the contact and place the summary in the docket. We will consider all comments received by the closing date and may amend the AD in light of those comments.

We are reviewing the writing style we currently use in regulatory documents. We are interested in your comments on whether the style of this document is clear, and your suggestions to improve the clarity of our communications with you. You may get more information about plain language at <http://www.faa.gov/language> and <http://www.plainlanguage.gov>.

## **Examining the AD Docket**

You may examine the AD Docket (including any comments and service information), by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. See ADDRESSES for the location.

## **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the regulation:

1. Is not a "significant regulatory action" under Executive Order 12866;
2. Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
3. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2003-NE-55-AD" in your request.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Safety.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at "[www.faa.gov](http://www.faa.gov)"*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2004-05-31 Rolls-Royce plc:** Amendment 39-13526. Docket No. 2003-NE-55-AD.

## Effective Date

- (a) This airworthiness directive (AD) becomes effective March 29, 2004.

## Affected ADs

- (b) None.

## Applicability

- (c) This AD applies to Rolls-Royce plc (RR) Trent 700 series turbofan engines. These engines are installed on, but not limited to, Airbus A330 series airplanes.

## Unsafe Condition

- (d) This AD results from the need to require enhanced inspection of selected critical life-limited parts of RR Trent 700 series turbofan engines. We are issuing this AD to prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane.

## Compliance

- (e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.
- (f) Within the next 40 days after the effective date of this AD, revise the Time Limits Manual (TLM), and for air carrier operations revise the approved continuous airworthiness maintenance program, by adding the following:
- "GROUP A PARTS MANDATORY INSPECTION
- (1) Inspections referred to as 'Focus Inspect' in the applicable Engine Manual inspection Task are mandatory inspections for the components given below, when the conditions that follow are satisfied:
- (i) When the component has been completely disassembled to piece-part level as given in the applicable disassembly procedures contained in the Engine Manual; and
- (ii) The part has more than 100 recorded flight cycles in operation since the last piece-part inspection; or

- (iii) The component removal was for damage or a cause directly related to its removal; or
- (iv) Where serviceable used components, for which the inspection history is not fully known, are to be used again.

(2) List of Group A Parts:

<b>Part nomenclature</b>	<b>Part No.</b>	<b>Inspected per overhaul manual task</b>
Low Pressure Compressor Rotor Disk	All	72-31-16-200-801
Low Pressure Compressor Rotor Shaft	All	72-31-20-200-801
Intermediate Pressure Compressor Rotor Shaft	All	72-32-31-200-801
Intermediate Pressure Rear Shaft	All	72-33-21-200-801
High Pressure Compressor Rotor Shaft	All	72-41-31-200-801
High Pressure Turbine Rotor Disk	All	72-41-51-200-801
Intermediate Pressure Turbine Rotor Disk	All	72-51-31-200-801
Intermediate Pressure Turbine Rotor Shaft	All	72-51-33-200-801
Low Pressure Turbine Stage 1 Rotor Disk	All	72-52-31-200-801
Low Pressure Turbine Stage 2 Rotor Disk	All	72-52-31-200-802
Low Pressure Turbine Stage 3 Rotor Disk	All	72-52-31-200-803
Low Pressure Turbine Stage 4 Rotor Disk	All	72-52-31-200-804
Low Pressure Turbine Rotor Shaft	All	72-52-33-200-801''

### **Alternative Methods of Compliance**

(g) You must perform these mandatory inspections using the TLM and the applicable Engine Manual unless you receive approval to use an alternative method of compliance under paragraph (h) of this AD. Section 43.16 of the Federal Aviation Regulations (14 CFR 43.16) may not be used to approve alternative methods of compliance or adjustments to the times in which these inspections must be performed.

(h) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

### **Maintaining Records of the Mandatory Inspections**

(i) You have met the requirements of this AD by using a TLM changed as specified in paragraph (f) of this AD, and, for air carriers operating under part 121 of the Federal Aviation Regulations (14 CFR part 121), by modifying your continuous airworthiness maintenance plan to reflect those changes. You must maintain records of the mandatory inspections that result from those changes to the TLM according to the regulations governing your operation. You do not need to record each piece-part inspection as compliance to this AD. For air carriers operating under part 121, you may use either the system established to comply with section 121.369 or use an alternative system that your principal maintenance inspector has accepted if that alternative system:

- (1) Includes a method for preserving and retrieving the records of the inspections resulting from this AD; and
- (2) Meets the requirements of § 121.369(c); and
- (3) Maintains the records either indefinitely or until the work is repeated.

(j) These record keeping requirements apply only to the records used to document the mandatory inspections required as a result of revising the Time Limits Manual as specified in paragraph (f) of this AD, and do not alter or amend the record keeping requirements for any other AD or regulatory requirement.

## **Related Information**

(k) CAA airworthiness directive No. G-2003-0004, dated September 18, 2003, also addresses the subject of this AD.

Issued in Burlington, Massachusetts, on March 5, 2004.

Jay J. Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. 04-5619 Filed 3-11-04; 8:45 am]

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